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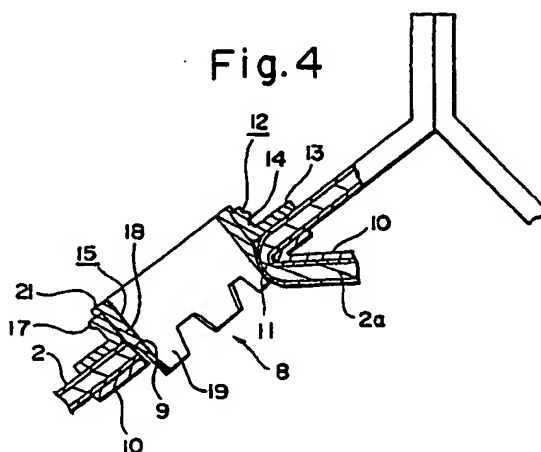
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(54) Paper container with opening plug.

(57) A paper container with an opening plug (12) provided such that the opening plug (12) is secured to an opening portion (8) formed in a container material having thermoplastic resin layers on the front and rear surfaces thereof, wherein: in the opening portion (8), a punching line (9) is formed with a part thereof being left, and a barrier film (10) is attached to the rear surface of the container material so as to cover the punching line; and the opening plug (12) includes a tubular holder (14) having a flange portion (13) attached to the outer peripheral edge of the punching line, the flange portion (13)

being provided on the outer periphery of the bottom end thereof, and a cutting member (15) having blade portions, connectingly provided in the holder by a breakable connecting portion, when the connecting portion is broken by the push-down of a push-move portion, the cutting member (15) is coupled into the holder (14), the cutting member (15) projecting from the bottom end of the holder (14) by the push-down of the push-move portion and cutting the barrier film covering the punching line (9) of the opening portion (22) along the punching line.

Fig.4



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## BACKGROUND OF THE INVENTION

### Field of the Invention

This invention relates to a paper container in which an opening plug is secured to an opening portion formed in a container material having thermoplastic resin layers on the front and rear surfaces thereof.

### Description of the Prior Art

Heretofore, there have been used a multiplicity of paper containers with opening plugs, each with an opening portion, in which an opening plug coupled with a vertically movable cutting member having blade portions at the bottom end thereof is attached. With the paper container with an opening plug of the type described, an opening portion 22 is formed with an opening hole 24, i.e. as the opening portion 22 in a container material 23, a barrier film 25 is attached to the rear surface of the container material 23 so as to cover the opening hole 24 (Refer to Fig. 5), and an opening plug 26 includes: a tubular holder 28 having a flange portion 27 attached to the outer peripheral edge portion of the opening hole 24 at the outer periphery of the bottom end thereof; and a tubular cutting member 29 being vertically movably coupled into the holder 28 and having blade portions at the bottom end thereof. The holder 28 is formed with a cut-away guide 30 from the top end to the downward direction and an eaves-shaped projection 31 engageable with the cut-away guide 30 is formed at the top end of the cutting member 29 (Refer to Fig. 6). To open the container, the cutting member 29 coupled into the holder 28 is pushed down by finger to the lower limit of the cut-away guide 30 formed in the holder 28, whereby the blade portions provided at the lower end of the cutting member 29 project from the bottom end of the holder 28 to cut the barrier film 25 of the opening portion 22, so that opening of the opening portion 22 can be achieved. The end of the cutting member 29 like this does not always project from the holder 28 before and after the opening.

With the above-described paper container having the opening plug, the opening portion 22 formed in the container material 23 is completely punched out, whereby, when the barrier film 25 covering the opening hole 24 is a film having a high extensibility, if the cutting member 29 is pushed down to open the container, then the barrier film 25 is extended and only portions of the barrier film 25 in contact with the blade portions are notched and the barrier film 25 tends to be left uncut.

Furthermore, opening is carried out by pushing the cutting member 29 into the holder 28, and, as the cutting member 29 is pushed in, the cutting member 29 sinks into the holder 28, whereby, it is cramped to push the cutting member 29 in, so that opening is troublesome to do.

Furthermore, since the cutting member 29 is simply coupled into the holder 28, such disadvantages are present that, when the coupled state is loose, the cutting member 29 automatically sinks and the blade portions thereof come into contact with the barrier film 25 covering the opening hole 24 of the opening portion 22 and tend to break the barrier film 25, and the blade portions tend to fall off the holder 28 at the time of pour-out of a liquid, and, when the coupled state is too tight, there is a trouble to push in the cutting member 29 and it is not easy to open the container.

## SUMMARY OF THE INVENTION

The present invention has a problem to solve the above-described disadvantages.

To solve the above-described problem, the present invention is of such an arrangement that a paper container with an opening plug features that the opening plug is secured to an opening portion formed in a container material having thermoplastic resin layers on the front and rear surfaces thereof, wherein:

in the opening portion, a punching line forming a contour of a hole is formed with a part thereof being left, and a barrier film is attached to the rear surface of the container material so as to cover the punching line; and

the opening plug includes: a tubular holder having a flange portion attached to the outer peripheral edge portion of the punching line, the flange portion being provided on the outer periphery of the bottom end thereof; and a cutting member having blade portions different in length from one another, connectingly provided in the holder by a breakable connecting portion, when the connecting portion is broken by the push-down of a push-move portion, the cutting member is coupled into the holder, the cutting member projecting from the bottom end of the holder by the push-down of the push-move portion and cutting the barrier film covering the punching line of the opening portion along the punching line.

The opening portion formed in the container material forms the punching line defining the contour of the hole in the container material and the barrier film is attached to the rear surface of the container material so as to cover the punching line, whereby the container material is present in the area surrounded by the punching line and the

barrier film is exposed only at the portion of the punching line. When the cutting member is pushed down, the connecting portion is broken, the push-move portion of the cutting member is coupled into the holder, the blade portions provided at the lower end of the push-move portion project from the bottom end of the holder to abut against the barrier film, whereby the barrier film is cut, so that the opening portion can be opened.

In the above-described cutting member, before the opening, the cutting member is connected to the holder through the connecting portion, whereby, during the preservation of the container, this connecting portion prevents the cutting member from sinking into the supporting holder, the blade portions of the cutting member are prevented from reaching the barrier film, and, during the opening, the cutting member is pushed down by finger to be coupled into the holder and received in the holder, so that the cutting member is not restricted by the holder when the cutting member is lowered.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a sectional view showing one embodiment of the present invention;

Fig. 2 is a perspective view showing the opening portion before the opening plug is secured;

Fig. 3 is a perspective view showing the cutting member of the opening plug;

Fig. 4 is an explanatory view showing the opened state;

Fig. 5 is a perspective view showing the opening portion before the opening plug in the conventional paper container with the opening plug is secured; and

Fig. 6 is a perspective view showing the conventional opening plug.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention will hereunder be described in detail in conjunction with the embodiments shown in the drawings.

In the drawing, designated at numeral 1 is a main body of paper container, numeral 2 is a container material forming the main body 1 of paper container, and this container material 2 is provided at the front and rear surfaces of a paper layer 3 with thermoplastic resin layers 4, 5. Denoted at numeral 6 is a top wall of the main body 1 of paper container and numeral 7 is a top seal portion. Indicated at numeral 8 is an opening portion formed in the container material 2 positioned at the top wall 6 of the main body 1 of paper con-

tainer. This opening portion 8 forms a punching line 9 on the container material 2 defining a contour of an opening hole, and the container material 2 is attached at the rear surface thereof with a barrier film 10 such as an aluminium foil so as to cover this punching line 9. With the punching line 9, all of the contour of the opening hole is not punched, but a non-punching portion 11 remains in the top seal portion 7 of the contour.

Designated at numeral 12 is an opening plug secured onto the opening portion 8 of the front surface of the container material 2 from outside. This opening plug 12 includes: a tubular holder 14 provided at the outer periphery of the bottom end thereof with a flange portion 13 which is attached to the outer peripheral edge portion of the punching line 9; a cutting member 15 supported by the holder 14; and a cap 16. The holder 14 is formed on the outer periphery thereof with threads 17 which are threadably coupled to a cap 16. Furthermore, the cutting member 15 is of such an arrangement that a plurality of blade portions 19 different in length at least within a range shorter than the tube length of the holder 14 are provided at the lower end of a tubular push-move portion 18 which can be coupled into the holder 14 and has a contour at an end face that is substantially similar in shape with the punching line 9. A connecting portion 20, which is attached to the holder 14, is easily breakable by push-cut made between the top end of the holder 14 and the bottom end of the push-move portion 18 in a state where the blade portions 19 are contained in the holder 14.

Then, the cutting member 15 is supported on the holder 14 by the connecting portion 20 in such a state that the push-move portion 18 projects from the top end of the holder 14 and the blade portions 19 are housed in the holder 14. When the cutting member 15 is pushed down toward the holder 14, the connecting portion 20 is broken due to the push-down force, whereby push-move portion 18 is coupled into the holder 14, so that the blade portions 19 formed at the bottom end of the push-move portion 18 project downward from the bottom end of the holder 14.

Designated at numeral 21 is a flange portion projectingly provided at the outer periphery of the top end of the push-move portion 18, and, when the push-move portion 18 is pushed down to be coupled into the holder 14, the flange portion 21 is adapted to abut against the top end of the holder 14.

A distance, for which the blade portions 19 project from the bottom end of the holder 14, is equal to a distance, for which the push-move portion 18 enters the holder 14, and, when the push-move portion 18 is pushed down and the flange portion 21 is abutted against the top end of the

holder 14, a distance, for which the blade portions 19 project from the bottom end of the holder 14, is a distance necessary and sufficient for cutting the barrier film 10 exposed in the punching line 9 of the opening portion 8.

Furthermore, the outer diameter of the push-move portion 18 is formed such that, when the push-move portion 18 is pushed into the holder 14, the push-move portion 18 holds such a degree of adhesion that the push-move portion 18 does not freely, vertically move in the holder 14. Or, the outer diameter of the push-move portion 18 may be gradually increased although the degree of increase is slight.

With the paper container with the opening plug having the above-described arrangement, during the preservation of the container, the push-move portion 18 of the cutting member 15 is projected by the connecting portion 20 upwardly from the top end of the holder 14, and the blade portions 19 are held in a state of being contained in the holder 14, so that there is no possibility that the barrier film 10 exposed in the punching line 9 of the opening portion 8 is damaged by the blade portions 19. To open the opening portion 8, the cap 16 is removed from the holder 14, the push-move portion 18 of the cutting member 15 is pushed down by finger to cut the connecting portion 20, the push-move portion 18 is coupled into the holder 14, and is made to sink by the length thereof.

By the coupling of this push-move portion 18 into the holder 14, the blade portions 19 provided at the bottom end of the push-move portion 18 project downward from the bottom end of the holder 14 and are abutted against the barrier film 10 from the punching line 9, the barrier film 10 is broken by the blade portions 19, the barrier film 10 is cut along the punching line 9, and, at the same time, a container material 2a surrounded by the punching line 9 is bent from the non-punching line 11 toward the interior of the container and the opening portion 8 is opened. In cutting the barrier film 10 by the blade portions 19, even if the barrier film 10 is a film having a high extensibility, the extension of the barrier film 10 due to the pressing of the blade portions 19 is limited to the portion of the barrier film 10 exposed in the punching line 9, the extension has almost no influence on the cutting of the barrier film 10 by the blade portions 19, and the barrier film 10 can be reliably cut.

As described hereinabove, according to the present invention, during the preservation of the container, since the cutting member is supported by the connecting portion such that the push-move portion of the cutting member projects from the top end of the holder and the blade portions are contained in the holder, there is no possibility that the barrier film is damaged by the blade portions be-

fore the opening. Furthermore, to open the container, it suffices that the push-move portion of the cutting member, which is projected above the holder and supported, is pushed down by finger to be pushed into the holder, the blade portions provided at the forward end cut the barrier film in the punching line, so that the opening portion can be opened. The opening is far easier than the opening by use of the conventional opening plug, even if the barrier film is a film having a high extensibility, the extension of the barrier film due to the pressing of the blade portions is limited to the portion of the barrier film exposed in the punching line, and the extension has almost no influence on the cutting of the barrier film, so that the barrier film can be reliably cut to achieve the opening. Furthermore, the push-move portion is closely fitted into the holder, so that there is no possibility that it falls off during use. Further, the holder and the cutting member can be formed integrally with each other, whereby the holder and the cutting member are formed integrally with each other, so that the manufacturing process can be shortened by this, thus enabling to improve the working efficiency.

## Claims

1. A paper container with an opening plug characterized in that said opening plug is secured to an opening portion formed in a container material having thermoplastic resin layers on the front and rear surfaces thereof, wherein:

in said opening portion, a punching line forming a contour of a hole is formed with a part thereof being left, and a barrier film is attached to the rear surface of the container material so as to cover the punching line; and

said opening plug includes: a tubular holder having a flange portion attached to the outer peripheral edge portion of said punching line, said flange portion being provided on the outer periphery of the bottom end thereof; and a cutting member having blade portions different in length from one another, connectingly provided in the holder by a breakable connecting portion, such that when the connecting portion is broken by the push-down of a push-move portion, the cutting member is coupled into the holder, said cutting member projecting from the bottom end of the holder by the push-down of the push-move portion and cutting the barrier film covering the punching line of the opening portion along the punching line.

Fig. 1

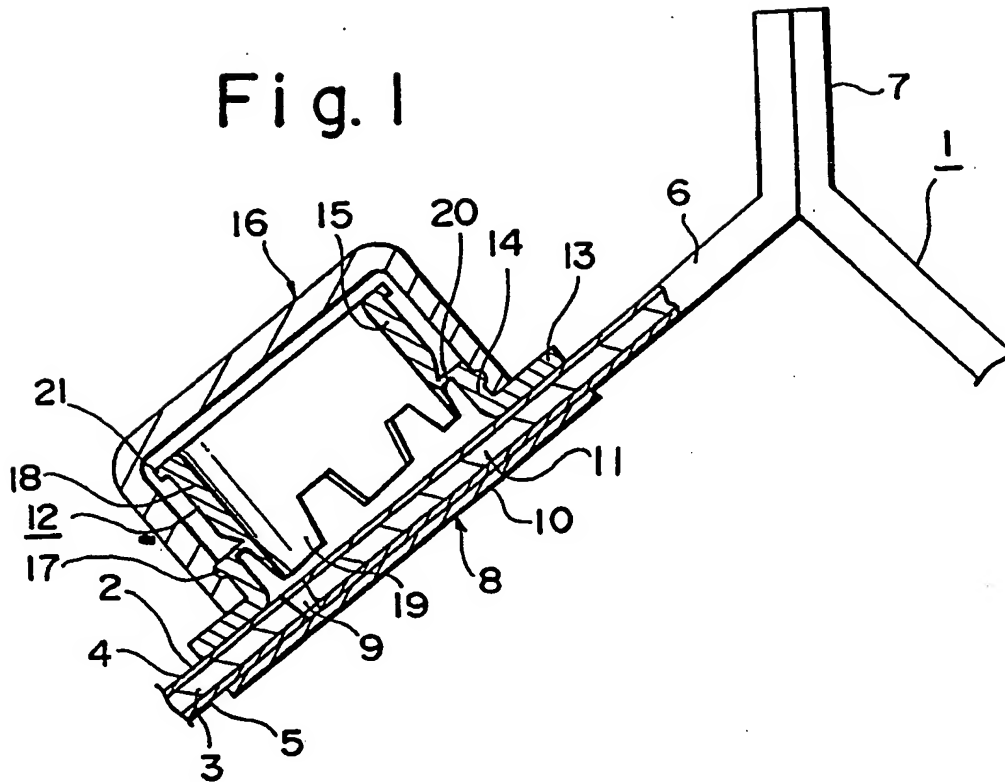
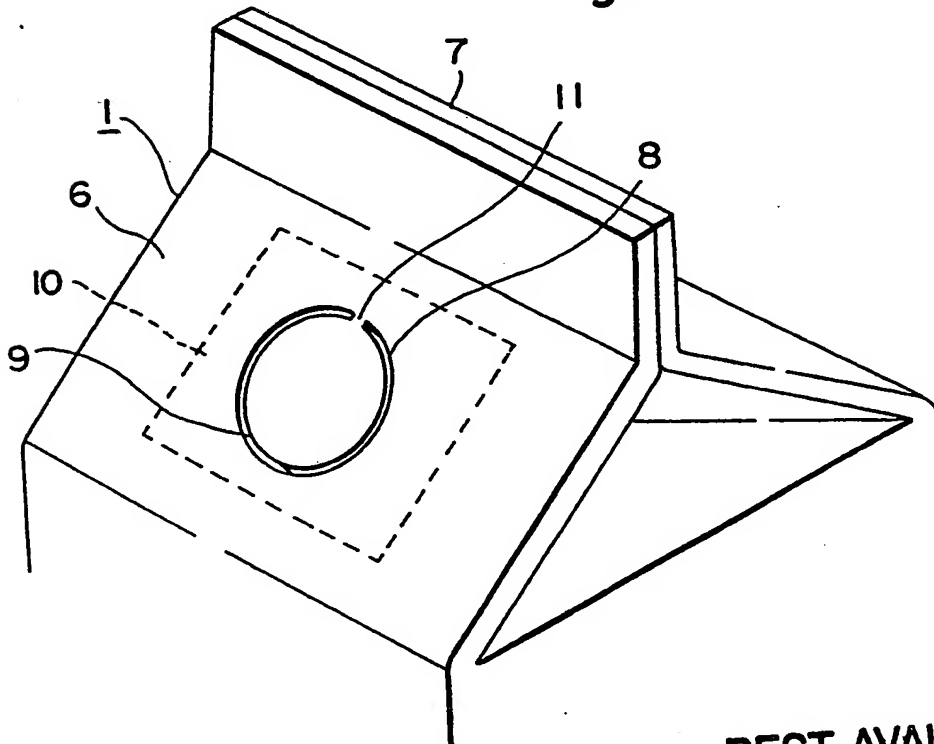


Fig. 2



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Fig. 3

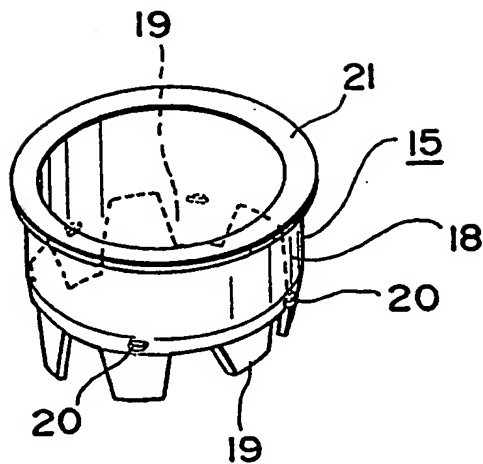
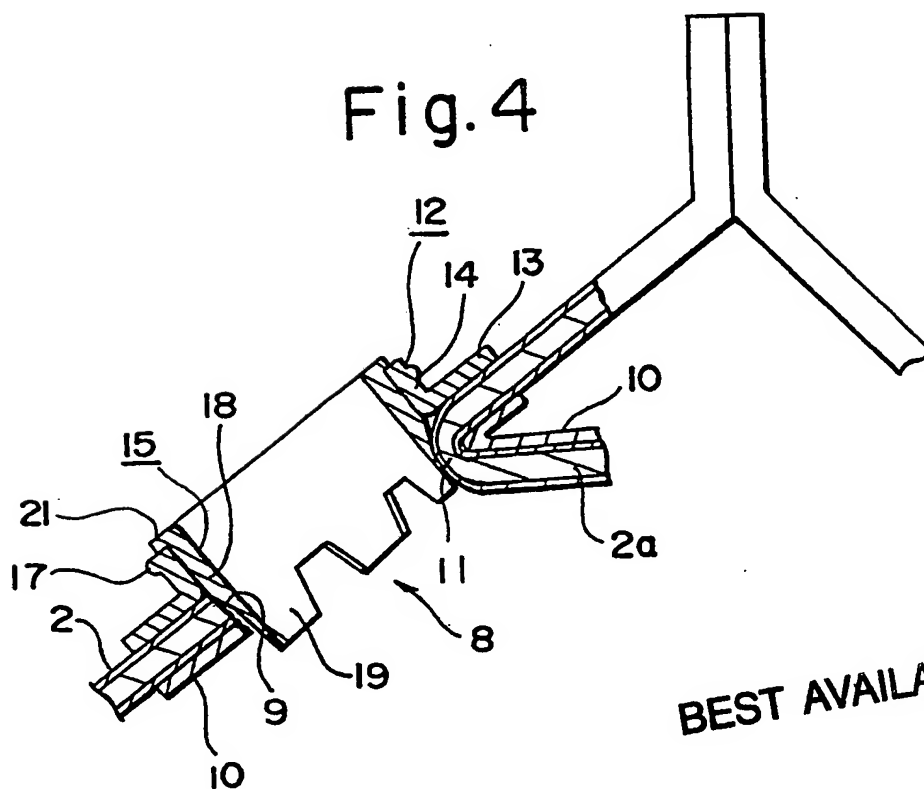


Fig. 4



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Fig.5

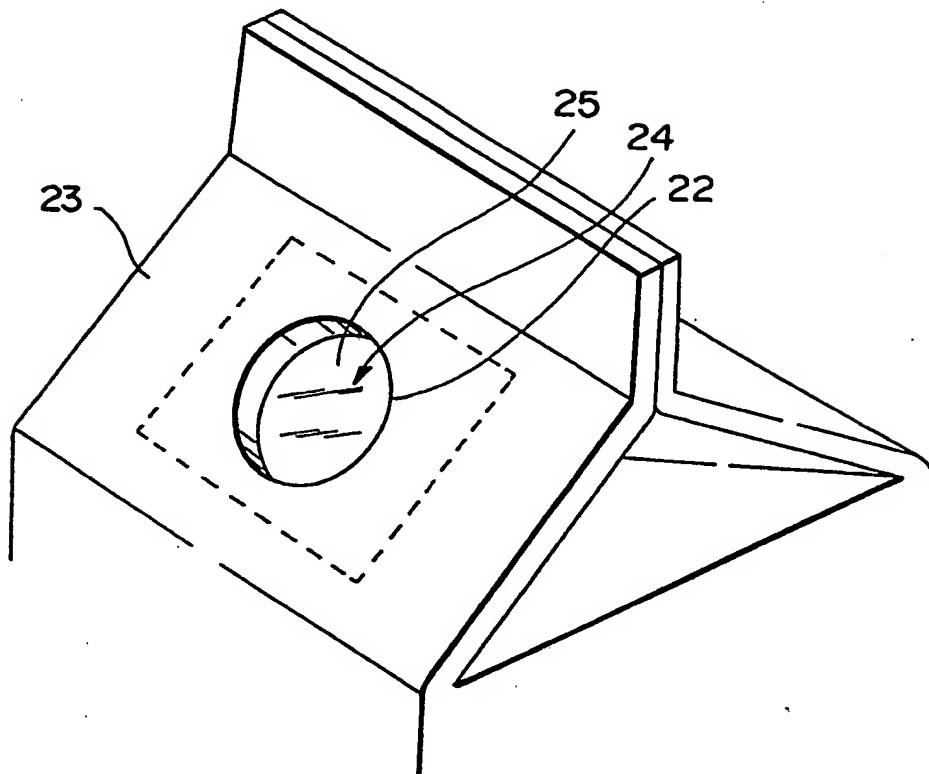
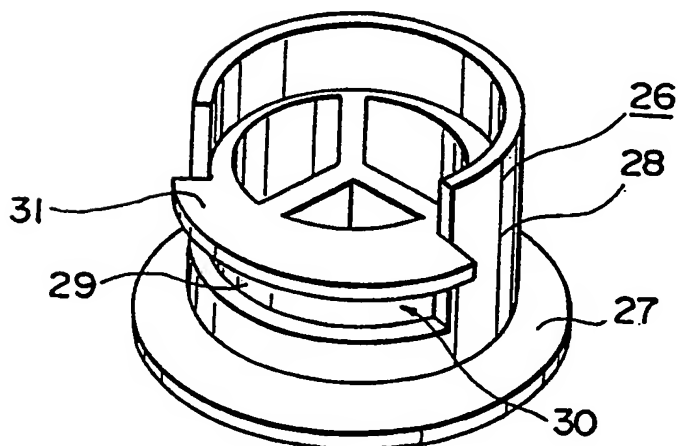


Fig.6



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# EUROPEAN SEARCH REPORT

Application Number

EP 90 30 1469

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	US-A-4 483 464 (NOMURA) * Columns 3,4; claims 1,2,6; figures 1-4 *	1	B 65 D 5/74
A	US-A-3 428 226 (LANAHAN) * Column 2, lines 4-18; figures 1,3,5 *	1	
A	FR-A-2 499 029 (ZUCHNER) * Page 11, line 33 - page 12, line 6; figure 14 *	1	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			B 65 D B 67 B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 17-05-1990	Examiner BESSY M.J.F.M.G.
<b>CATEGORY OF CITED DOCUMENTS</b> X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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